

prevention/hand hygiene

I Make Tummies Hurt

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I am a double-stranded RNA virus. A member of the *Sedoreoviridae* family, I can infect multiple types of vertebrates. Humans, however, are primarily infected by species A of my virus. I hold the record for the virus causing the most cases of gastroenteritis in humans worldwide, particularly children and infants. The diarrhea that I cause can be severe and very dehydrating, leading to hospitalizations and even death, especially in vulnerable and pediatric populations.

I have a relatively short history in written literature, first described in 1943 by Jacob Light and Horace Hodes during epidemics of infantile diarrhea in Baltimore, Maryland and Washington, DC. Together, they concluded that a virus was responsible for the diarrhea epidemic, studying the effect on calves that consumed the feces of infected infants. When the calves also developed diarrhea, the physicians concluded it was infectious and caused by a single agent. Today, it is suspected that this agent was me. In 1973, using an electron microscope, Australian virologist Ruth Bishop and colleagues were able to visualize my virus in the intestinal tissue of children. My virus was then given its name, derived from Latin, and based on the similarity of my appearance to a wheel. By 1980, it became known that I am the most frequent cause of gastroenteritis in children in the United States.

People become infected with my virus when virus particles enter their mouths. This generally occurs after their hands become contaminated with my virus from the environment or an infected person. My virus can also be consumed when water or food becomes contaminated and ingested. Once infected, incubation takes approximately 2 days before symptoms begin. They include fever, abdominal pain, vomiting, and watery diarrhea for 3 to 8 days. Vomiting and diarrhea can lead to severe dehydration, resulting in dry mouth, decreased urination, dizziness, and an inability to produce tears. Previous infection and vaccination may reduce the severity of symptoms, but nothing can provide complete immunity from my virus. Although adults can become infected with me, infection in children tends to be more severe.

Treatment for my virus is supportive, consisting of oral rehydration to counteract the dehydration that often develops due to severe vomiting and diarrhea. Immunocompromised persons, children younger than 5 years, and individuals without access to basic supportive treatment—such as clean water for

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rehydration—may experience severe illness and even death. Fortunately for them, most individuals will recover from this limited illness. In some areas of the world, my illness follows a more seasonal pattern, being more prevalent in the fall and winter months in areas with a more temperate climate. Seasonal patterns are less notable in more tropical climates.

Before the development of a vaccine for my virus, I caused approximately 500,000 deaths per year worldwide, mostly in children younger than 5 years. In 2006, 2 vaccines were approved by the United States. However, at the end of 2022, only 121 of 195 countries worldwide had access to a vaccine for my virus. With the availability of a vaccine, deaths are estimated to have dropped to approximately 200,000, with 80% of those deaths being in low- to middle-income countries. In 2016, Pakistan, India, Nigeria, and the Republic of Congo accounted for nearly 50% of all deaths associated with my virus.

I am Rotavirus! □